

Remarks

This application has been reviewed in light of the current Office Action. Claims 1-23 are pending, and all claims are rejected. In response, the Specification is amended; claims 1, 6, 8, 13, 19, and 20 are amended; new claim 24 is added; claim 7 is canceled, without prejudice; and the following remarks are submitted. Reconsideration of this application, as amended, is requested.

Claims 1, 6-11, and 20 are rejected under 35 USC 102 as anticipated by Vincent US Patent 3,906,123. Applicant traverses this ground of rejection.

The following principle of law applies to sec. 102 rejections. MPEP 2131 provides: "A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference. The identical invention must be shown in as complete detail as is contained in the ... claim. The elements must be arranged as required by the claim..." [citations omitted] This is in accord with the decisions of the courts. Anticipation under section 102 requires 'the presence in a single prior art disclosure of all elements of a claimed invention arranged as in that claim.' *Carella v. Starlight Archery*, 231 USPQ 644, 646 (Fed. Cir., 1986), quoting *Panduit Corporation v. Dennison Manufacturing Corp.*, 227 USPQ 337, 350 (Fed. Cir., 1985)

Thus, identifying a single element of the claim which is not disclosed in the reference is sufficient to overcome a Sec. 102 rejection.

Vincent discloses a three-layer system applied to the surface of a support, to make a pressure-sensitive record system (col. 1, lines 5-9). The first layer adjacent to the surface has an encapsulated color-reactant material, the second layer overlying the first layer is a pressure-rupturable barrier layer, and the third layer overlying the second layer has an absorbent electron-acceptor material. When a pressure such as produced by a pencil or pen is applied to the three-layer system and the support, the membranes rupture, and the color-reactant material and the electron-acceptor material mix to produce color. This approach

requires that three layers with separated, unmixed chemical be sequentially applied to the surface of the support.

Amended claim 1 recites in part:

“preparing an indicator paint..., wherein the indicator paint comprises a mixture of a first reactant and a second reactant separated by a barrier that is rupturable so that the first reactant and the second reactant mix and produce the visible change when the indicator paint is subjected to the impact”

applying the indicator paint to the surface of the material...”

Amended claim 1 further recites in part:

“placing the material having the indicator paint thereon into circumstances where it may be subject to the mechanical impact”.

Vincent does not disclose either of these limitations. Vincent does not disclose preparing an indicator paint that is a mixture of a first reactant and a second reactant, and applying that indicator paint to the surface. Vincent applies a coating in three layers whose components are not mixed together. Vincent does not disclose the use of an indicator paint in circumstances of mechanical impact.

Claim 20 recites in part:

“a paint applied to the surface of the article, wherein the paint comprises

a plurality of microcapsules, and wherein each microcapsules comprises a first reactant, and

a matrix comprising a paint binder and a second reactant, wherein the plurality of microcapsules is mixed with and embedded in the

matrix,”

Vincent does not disclose a paint having a matrix with a paint binder and a second reactant, wherein a plurality of microcapsules of a first reactant is mixed with and embedded in the matrix. In the Vincent three-layer system, the capsules of the color-reactant material are never mixed with and embedded in a matrix that contains the electron-acceptor material.

Applicant asks that the Examiner reconsider and withdraw this ground of rejection.

Claims 21-23 are rejected under 35 USC 102 over Yamamura US Patent 4,618,529. Applicant traverses this ground of rejection.

Yamamura discloses a ceramic material that is reinforced with inorganic fibers (Abstract, claim 1, col. 2, lines 29-48). Although the explanation of the rejection refers to “an indicator coating applied thereto”, Yamamura has no disclosure of an indicator coating. The explanation of the rejection references col. 4, lines 58-68; col. 5, lines 21-40; and col. 6, lines 52-53 as related to design standards for materials having an indicator coating applied thereto. None of these portions of Yamamura, nor any other portion of Yamamura, mentions indicator coatings in any way. Col. 4, lines 58-68 discloses a list of materials that may be used for the ceramic matrix. Col. 5, lines 21-40 discloses a list of materials that may be used as binders during sintering. Col. 6, lines 52-53 discloses the critical stress intensity factor  $K_{IC}$ , which is a measured material property, not a design standard. (See col. 6, lines 62-64 for a discussion of how the critical stress intensity is measured on the ceramic or composite material.)

The explanation of the rejection references col. 6, lines 52-64 of Yamamura as disclosing design standards when there is no indicator coating applied thereto. Col. 6, lines 52-64 make no reference to design standards. This paragraph of Yamamura discusses the critical stress intensity factor  $K_{IC}$ , and makes no mention of the presence or absence of coatings.

Claim 21 recites in part:

“setting a first design standard for the low-ductility material having an indicator paint applied thereto”.

Yamamura has no disclosure of a first design standard when an indicator paint is applied thereto.

Claim 21 further recites in part:

“the indicator paint has an impact-sensitive component that produces a visible change when subjected to a mechanical impact;”

Yamamura has absolutely no disclosure of an impact-sensitive indicator paint or coating of any type.

Claim 21 further recites in part:

“setting a second design standard for the low-ductility material which does not have the indicator paint applied thereto.”

Yamamura has no disclosure of setting a second design standard when there is no indicator paint applied thereto, because Yamamura has no disclosure of indicator paints at all.

In short, Yamamura has nothing to do with the subject matter of claims 21-23, the setting of design standards in the presence and absence of indicator paints.

Applicant asks that the Examiner reconsider and withdraw this ground of rejection.

Claims 2-5 and 12-19 are rejected under 35 USC 103 over Vincent in view of Yamamura. Applicant traverses this ground of rejection.

MPEP 2142, under ESTABLISHING A PRIMA FACIE CASE OF OBVIOUSNESS, provides: “To establish a prima facie case of obviousness, three basic

criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine the reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure. [references omitted]. See MPEP para 2143-2143.03 for decisions pertinent to each of these criteria.

Addressing the third requirement, the following principle of law applies to all sec. 103 rejections. MPEP 2143.03 provides "To establish prima facie obviousness of a claimed invention, all claim limitations must be taught or suggested by the prior art. *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974). All words in a claim must be considered in judging the patentability of that claim against the prior art. *In re Wilson*, 424 F.2d 1382, 1385, 165 USPQ 494, 496 (CCPA 1970)." [emphasis added] That is, to have any expectation of rejecting the claims over a single reference or a combination of references, each limitation must be taught somewhere in the applied prior art. If limitations are not found in any of the applied prior art, the rejection cannot stand. In this case, the applied prior art references clearly do not arguably teach some limitations of the claims.

Amended claim 1 recites in part:

"preparing an indicator paint..., wherein the indicator paint comprises a mixture of a first reactant and a second reactant separated by a barrier that is rupturable so that the first reactant and the second reactant mix and produce the visible change when the indicator paint is subjected to the impact"

applying the indicator paint to the surface of the material..."

Amended claim 1 further recites in part:

"placing the material having the indicator paint thereon into circumstances where it may be subject to the mechanical impact".

Neither references teaches either of these limitations. Vincent does not teach preparing an indicator paint that is a mixture of a first reactant and a second reactant, and applying that indicator paint to the surface. Vincent does not teach the use of an indicator paint in circumstances of mechanical impact. Yamamura does not teach either indicator paints or circumstances of mechanical impact. (Yamamura measures the critical stress intensity and thence the critical stress intensity factor  $K_{IC}$  by an indentation fracture method, not an impact method, see col. 6, lines 62-64.)

Claims 2-5 depend from claim 1, and are allowable because the references do not teach the limitations of claim 1. Additionally, neither reference teaches the “less than about 2 percent” limitation of claims 2-5, and neither reference teaches the “polymer-matrix composite material” limitation of claim 4.

Claims 11-13 depend from claim 1, and are allowable because the references do not teach the limitations of claim 1. Additionally, neither reference teaches the “design limit” limitations of claims 11-13. Vincent admittedly does not have such a teaching, and Yamamura also has no such teaching for the reasons stated in relation to the remarks concerning sec. 112 rejection involving Yamamura, which remarks are incorporated here. The critical stress intensity factor  $K_{IC}$  is a measured material property, not a “design limit”, see col. 6, lines 62-64.

Claim 14 recites in part:

“providing the composite material having a surface, wherein the composite material has a tensile elongation to failure of less than about 2 percent;”

Vincent admittedly has no such teaching. Applicant can find no location in Yamamura that sets forth such a teaching. The explanation of the rejection references col. 7, lines 26-36 of Yamamura, but this portion of Yamamura simply says that the composite material of Yamamura achieves an improvement over the inherent brittleness of the unreinforced ceramic material. If Yamamura’s composite achieves such an improvement, then very possibly its tensile elongation to failure is greater than about 2 percent. In any

event, Yamamura does not teach any particular tensile elongation to failure, and specifically does not teach the above-quoted limitation of claim 14.

Claim 14 further recites in part:

“placing the composite material having the indicator paint thereon into circumstances where it may be subject to the mechanical impact;”

Neither reference has any mention of mechanical impact, as far as Applicant can determine. The explanation of the rejection does not mention this limitation at all. If the rejection is maintained, Applicant asks that the Examiner point out where either of the references teaches about mechanical impact, or the use of an indicator paint on a composite material that may be subject to mechanical impact. Yamamura does not mention indicator paints at all.

Claims 15-19 depend from claim 14, and are therefore allowable as well.

Additionally, claims 18-19 include the “design limit” limitations that are not taught by either reference.

MPEP 2142, also provides that there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine the reference teachings. The present rejection is a sec. 103 combination rejection. A proper sec. 103 combination rejection requires more than just finding teachings in the references of the elements recited in the claim (but which was not done here). To reach a proper teaching of an article or process through a combination of references, there must be stated an objective motivation to combine the teachings of the references, not a hindsight rationalization in light of the disclosure of the specification being examined. MPEP 2142, 2143 and 2143.01. *See also*, for example, *In re Fine*, 5 USPQ2d 1596, 1598 (at headnote 1) (Fed.Cir. 1988), *In re Laskowski*, 10 USPQ2d 1397, 1398 (Fed.Cir. 1989), *W.L. Gore & Associates v. Garlock, Inc.*, 220 USPQ 303, 311-313 (Fed. Cir., 1983), and *Ex parte Levengood*, 28 USPQ2d 1300 (Board of Appeals and Interferences, 1993); *Ex parte Chicago Rawhide Manufacturing Co.*, 223 USPQ 351 (Board of Appeals 1984). As stated in *In re Fine* at 5 USPQ2d 1598:

"The PTO has the burden under section 103 to establish a prima facie case of obviousness. [citation omitted] It can satisfy this burden only by showing some objective teaching in the prior art or that knowledge generally available to one of ordinary skill in the art would lead that individual to combine the relevant teachings of the references."

And, at 5 USPQ2d 1600:

"One cannot use hindsight reconstruction to pick and choose among isolated disclosures in the prior art to deprecate the claimed invention."

Following this authority, the MPEP states that the examiner must provide such an objective basis for combining the teachings of the applied prior art. In constructing such rejections, MPEP 2143.01 provides specific instructions as to what must be shown in order to extract specific teachings from the individual references:

"Obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention when there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988); *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992)."

\* \* \* \* \*

"The mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination." *In re Mills*, 916 F.2d 680, 16 USPQ2d 1430 (Fed. Cir. 1990)."

\* \* \* \* \*

"A statement that modifications of the prior art to meet the claimed invention would have been 'well within the ordinary skill of the art at the time the claimed invention was made' because the references relied upon teach that all aspects of the claimed invention were individually known in the art is not sufficient to establish a prima facie case of obviousness



without some objective reason to combine the teachings of the references.

*Ex parte Levengood*, 28 USPQ2d 1300 (Bd.Pat.App.& Inter. 1993).”

Here, there is set forth no objective basis for combining the teachings of the references in the manner used by this rejection, and selecting the helpful portions from each reference while ignoring the unhelpful portions. An objective basis is one set forth in the art or which can be established by a declaration, not one that can be developed in light of the present disclosure.

The argued basis is set forth at page 4, lines 18-23, “...it would have been obvious...to modify Vincent et al. according to the teachings of Yamamura et al. for the purpose of, providing a ceramic composite material with a critical stress factor to achieve a great improvement in the inherent brittleness and non-uniformity in the mechanical strength of ceramics and a composite material that is suitable for use as a structure material...” The problem with this argument is that Vincent has nothing to do with composite materials or ceramic materials or ceramic composite materials. At col. 4, lines 14-24, Vincent describes his substrates of interest: paper, plastic, and fabric or textile webs. There is no teaching of composite materials or ceramic materials or ceramic composite materials. So the argument of producing an improved ceramic composite material states a possible result of Yamamura, but it has nothing to do with a reason for combining the teachings of Vincent and Yamamura.

If the rejection is maintained, Applicant asks that the Examiner set forth the objective basis found in the references themselves for combining the teachings of the references, and for adopting only the helpful teachings of each reference and disregarding the unhelpful teachings of the reference.

MPEP 2142 also provides that there must be a reasonable expectation of success in combining the teachings of the references. The explanation of the rejection did not explain how combining the teachings of Yamamura concerning fiber-reinforced ceramic composites could improve the paper, plastic, or fabric or textile webs discussed by Vincent. If the rejection is maintained, Applicant asks that the Examiner address this point. In fact, Vincent and Yamamura deal with completely different and unrelated subject matter, and

there is no basis for combining their teachings.

Applicant asks that the Examiner reconsider and withdraw this ground of rejection.

Applicant submits that the application is now in condition for allowance, and requests such allowance of all the claims and issuance of the application as a patent.

Respectfully submitted,



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